

## AFNI Jazzercise Answers

Below are the solutions to the AFNI Jazzercise questions.

1. 

```
3dbucket -prefix some_stats func_slim+orig'[0,3-$]'
```
2. 

```
3dMean -prefix anat_mean anat1+orig anat2+orig anat3+orig
```
3. 

```
3dIntracranial -anat anat+orig -prefix anat_3dIntra -min_val 500 -max_val 2000  
3dSkullStrip -input anat+orig -prefix anat_3dSkull
```
4. Making and Playing with ROI Masks:
  - a. 

```
3dcalc -a 'func_slim+orig[2]' -b 'func_slim+orig[4]' \
-expr 'ispositive(a-4.2) * ispositive(b-4.2)' \
-prefix PN_mask
```
  - b. 

```
3dcalc -a 'func_slim+orig[2]' -b 'func_slim+orig[4]' \
-expr 'ispositive(a-4.2) + 2 *ispositive(b-4.2)' \
-prefix PN_mask_4
```
  - c. Use the “**Pos?**” toggle button (in the AFNI GUI→Define OverLay) for positive-only intensities, and set the “**#\*\***” (number of colors) to 4. Red, orange and yellow are values 1, 2, and 3, respectively.
  - d. 

```
3dROIstats -mask PN_mask+orig -quiet epi_r1+orig > PN_mean.1D
```
5. Fun with 1D files:
  - a. 

```
count 1 10 > row1.1D
count 11 20 > row2.1D
count 21 30 > row3.1D
```

  

```
1dtranspose row1.1D > col1.1D
1dtranspose row2.1D > col2.1D
1dtranspose row3.1D > col3.1D
```
  - b. 

```
1dcat col1.1D col2.1D col3.1D > 3cols.1D
```
  - c. 

```
1dcat col1.1D col2.1D col3.1D \
col3.1D col2.1D col1.1D > 6cols.1D
```
  - d. 

```
1deval -a '6cols.1D[0]' -b '6cols.1D[1]' \
-c '6cols.1D[2]' -d '6cols.1D[3]' \
-e '6cols.1D[4]' -f '6cols.1D[5]' \
-expr '(a+b+c+d+e+f)/6' > ex_mean.1D
```
6. Fun with the afni GUI:
  - a. Right-click the gray-scale bar of any viewing plane (e.g., sagittal) and select the **Choose Display Mode Range**. Type in the numbers **500 1500**.
  - b. Go to Define OverLay in the afni GUI. For both OLay and Thr select sub-brick #0 (Full F-stat). To display only positive overlay values, click on the “**Pos?**” button. To show only 8 panels in the color bar, select the “**#8**” button. Now place your cursor on the color panel that is colored pink. If you leave your cursor there for a moment, the numbers 14.2-28.4 will appear. This means that F-values that fall within this range will appear in the OverLay dataset as pink. To change the color from pink to lime green, left-click on the pink panel and a hidden pop-up menu will appear that allows you to change the color.

- c. The easiest way to save a jpeg file is to right-click on the **Sav1.ppm** button in the sagittal viewer. This will open a hidden menu that allows you to save the image as a ppm, jpg, gif, tif, etc. Select the **jpg** button. This will change the Sav1.ppm to a **Sav1.jpg** button. Click on that and type in the prefix name **cool\_slide** and save it.
- d. Right click in one of the viewing planes (e.g., sagittal), which will open a hidden menu. Select the **Talairach To** button and select the right fusiform gyrus from the menu.
- e. Go to the sagittal viewer and click on the **Mont** (Montage) button at the bottom of the viewer. This will open the Montage controller. Select **3** slices Across, **2** slice Down and **Set**.
- f. The Mission Statement is hidden in the empty space in the bottom left-hand corner of the afni GUI (just to the right of the **done** button). Right-click in this empty space to gain access to the Mission Statement and other AFNI tidbits.

## 7. Doing calculations in AFNI:

a. `3dinfo func_slim+orig`

In the output, look for lines starting with '--At sub-brick'. The datum type is given following 'datum type is'.

b. `ccalc '22.3 * 44.5'`

## 8. Image Filtering:

a. `3dmerge -1blur_fwhm 8 -doall -prefix ex_blur8 epi_r1+orig`

b. `3dLocalstat -nbhd 'RECT(0,0,-3)' -stat min \
-prefix ex_minz3 anat+orig`

c. `3danisosmooth -viewer -prefix ex_anisotest ex_minz3+orig`  
`3danisosmooth -prefix ex_aniso -iters 3 ex_minz3+orig`

## 9. Random Exercises with AFNI Datasets:

a. `3dinfo anat+orig` (and look for `-orient`)  
`3daxialize -prefix exLPI -orient LPI anat+orig`  
`3dresample -prefix exLPI -orient lpi -inset anat+orig`

b. `3dbucket -prefix ex_fneg_coef func_slim+orig'[3]'`  
`3dbucket -prefix ex_fneg_tstat func_slim+orig'[4]'`

c. `3dbucket -prefix ex_fneg \
-ex_fneg_coef+orig ex_fneg_tstat+orig`

d. `adwarp -apar anat+tlrc -dpar func_slim+orig \
-prefix func_slim4mm -dxyz 4`

e. `3dmaxima -input func_slim+orig'[0]' | head`  
`whereami -38.9 28.72 -1.93 -rai`

f. `3dzcutup -keep 40 90 -prefix anat_40_90 anat+orig`